

ABSTRACT

Circuits and methods are provided for operating a transistor as rectifier based upon the detected V_{ds} of the transistor. In sensing the V_{ds} voltage of the SRMOS, during positive conduction, the SRMOS body diode will conduct and the V_{ds} of the SRMOS becomes that of a forward body diode voltage, which may, depending on the type of the device, be approximately - 0.6V. If this voltage level is sensed, it may indicate that the SRMOS is turned off too early. During reverse conduction, V_{ds} is non-existent (which is similar to a diode). In this case, the SRMOS may be turned off too late. Thus, by examining V_{ds} , the SRMOS can be operated in such a manner so that it is turned off at an optimal point in time. Furthermore, by examining the duration of the on-time and/or off-time of said V_{ds} voltage during a previous cycle or during the present cycle, the methods and circuits of the present invention can quickly adapt to rapidly changing duty cycles.